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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,804	02/20/2004	Young-Hun Joo	5000-1-526	7185

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EXAMINER

LEUNG, WAI LUN

ART UNIT	PAPER NUMBER
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2613

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/783,804

Applicant(s)

JOO ET AL.

Examiner

Danny Wai Lun Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 4 recites the limitation "the server computer" on page 14, line 5-6. There is insufficient antecedent basis for this limitation in the claim.
4. Claims 1, 6, 8, and 9 recites the limitation "PHY device", while the specification does not expressly explain what PHY stands for, the PHY devices as illustrated in fig 3 and 4 appears to be contradict with traditional meanings of "Physical Layer devices" as it is best understood by a person of ordinary skill in the art. There is insufficient antecedent basis for this limitation in the claim.
5. Claims 11 and 12 recites the limitation "FX signal"; this abbreviation is not clearly explained as to what it stands for. There is insufficient antecedent basis for this limitation in the claim.
6. The term "type" in line 10 of claim 1 is a relative term which renders the claim(s) indefinite. The term "type" is not defined by the claim(s), the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. See MPEP 2173.05(b) section "E". Also see

Ex parte Copenhaver, 109 USPQ 118 (Bd. App. 1955), and *IPXL Holdings, LLC v. Amazon.com, Inc.*, 333 F. Supp. 2d 513 (E.D. Va. 2004).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-5, and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Farmer** (US007146104B2), in view of **Bohn et al.** (US005311344A), and further in view of **Spurgeon** (*Ethernet: The Definitive Guide, chapters 9 & 10*).

Regarding claim 1, **Farmer** discloses an optical subscriber network system (*fig 7*), comprising: a server bi-directional optical transmitter (*fig 7, data server both sends and receives optical signals over optical waveguide 150*) and a subscriber bi-directional optical receiver (*fig 7, subscriber in the home both sends and receives optical signals over optical waveguide 150*).

Farmer does not disclose expressly the details within the server and the subscriber.

Bohn, from the same field of endeavor, teaches an optical subscriber network system (*fig 1*) comprising:

a server bi-directional optical transmitter (*2, fig 1*) including

a multiplexer (*22, fig 1*) to multiplexes communication data and broadcast data (*col 3, ln 12-23*),

a server laser diode (*23, fig 1*) to converts the multiplexed data into an optical signal (*col 3, ln 16-23*), and

a server photo diode (*24, fig 1*) to receive communication data from a subscriber (*51, fig 1*),

wherein the server bi-directional optical transmitter transmits the upstream communication data (*col 2, ln 47-49 defined inbound service as upstream traffic; col 3, ln 57-61 described the discriminator 28 in the headend output this inbound service, which is an upstream traffic*); and

a subscriber bi-directional optical receiver (*subscriber terminal 51, fig 1; also shown in fig 2*) including

a subscriber laser diode (*55, fig 2*) to transmit upstream communication data (*col 4, ln 33-35*),

a subscriber photo diode (*photodetector 52, fig 2*) to receive the optical signal transmitted from the server bi-directional optical transmitter (*col 4, ln 19-25*), and

a demultiplexer (*54, fig 2*) to demultiplex and divide the multiplexed signal into communication data and broadcast data (*col 4, ln 28-32*).

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Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to implement **Farmer's** system using **Bohn's** server bi-direction optical transmitter and subscriber bi-directional optical receiver. The motivation for doing so would have been to enable bi-directional non-interfering transmission of broad-band services on a single fiber as suggested by **Bohn**.

The combination of Farmer and Bohn does not disclose expressly wherein the server bi-directional optical transmitter includes a first PHY device to convert the communication data received from the server photo diode into a media independent interface type (MII) signal; and an Ethernet switch coupled to the first PHY device, the multiplexer and a second PHY device. **Spurgeon**, from the same field of endeavor, teaches a common and well known method of configuring a server using a first PHY device to convert the communication data received from a photo diode into a media independent interface type (MII) signal (*section 10.1.3; fig 10-2*); and an Ethernet switch coupled to the first PHY device, the multiplexer and a second PHY device (*fig 10-4; section 10.3*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to configure **the combination of Farmer and Bohn's** system using PHY devices and Ethernet switch as suggested by **Spurgeon**. The motivation for doing so would have been to enable faster communication speed by performing optical communication while complying with the ANSI x3T9.5 FDDI standard (*Spurgeon, section 10.1.4*).

As to claim 2, **Bohn** further teaches wherein the multiplexer and demultiplexer are a time division multiplexer (TDM) and demultiplexer (TDDM), respectively (*col 3, ln 13-14; col 4, ln 28-30*).

As to claims 3 and 4, **Farmer** further teaches wherein the communication data is received from a server computer (608, *fig 7; col 22, ln 41-49*), and wherein the server bi-directional optical transmitter transmits the upstream communication data to the server computer (*col 22, ln 41-46*).

As to claim 5, **Bohn** further teaches wherein the subscriber bi-directional optical receiver providing the communication data divided by a TDDM (*col 4, ln 28-30*), **Bohn** does not disclose expressly having a subscriber-side computer. **Farmer**, from the same field of endeavor, teaches a subscriber bi-directional optical receiver providing communication data to a subscriber-side computer, and the data can be received at various time (*col 28, ln 40-53*).

Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to provide communication data to a subscriber-side computer using **Bohn's** subscriber bi-directional optical receiver providing the communication data divided by a TDDM, as suggested by **Farmer**. The motivation for doing so would have been to be able to utilize data transmitted via digital contention network protocols such as Ethernet formatted packets by using a subscriber-side computer (*Farmer, col 3, ln 13-20*).

Regarding claim 8, the combination of **Bohn, Farmer, and Spurgeon** discloses the system in accordance to claim 5 as discussed above. **Farmer** further teaches wherein the subscriber bi-directional optical receiver comprises: an Ethernet switch (568A, *fig 7*) to (1) switch the communication data to a subscriber-side computer (*fig 7, 572A*), and (2) receive the communication data from the subscriber computer (*col 18, ln 36-50*); and a third PHY device (*fig 7, 568B*) coupled to the demultiplexer, wherein a TX signal from the Ethernet switch is used to operate the third PHY device (*fig 7 illustrates Upstream/Downstream Ethernet Data is being*

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sent to the third PHY device 568B). **Spurgeon** further teaches a type of PHY device being used to convert the communication data with a MII type into a TX signal for the Ethernet switch, and convert a MII signal from the Ethernet switch into a TX signal for the subscriber laser diode (*fig 10-2; section 10.1.3*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to combine the teachings of **Bohn, Farmer, and Spurgeon** for the same reasons as stated above.

As to claim 9, **Spurgeon** further teaches a first PHY device converts a 100 Base-T optical fiber signal into a MII signal (*fig 9-2; section 9.1.3*), and the second PHY device converts a media independent interface (MII) signal into a multi level transmit-3 (MLT-3) signal (*section 9.1.4.1*).

As to claim 10, **Bohn** further teaches wherein the TDM inserts a plurality of broadcast data streams and communication data into time slots and generates time slot frames (*col 4, ln 19-22*).

As to claim 11, **Spurgeon** further teaches wherein subscriber bi-directional optical receiver further comprising:

a third PHY device to converting a media independent interface (MII) signal input from an Ethernet switch into a FX signal and output the FX signal to the subscriber laser diode (*fig 10-2; section 10.1.3*).

As to claim 12, **Spurgeon** further teaches wherein the FX signal is a non return to zero inversion (NRZI) signal (*section 10.1.4.1*).

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10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Farmer** (*US007146104B2*), in view of **Spurgeon** (*Ethernet: The Definitive Guide, chapters 9 & 10*).

Regarding claim 6, **Farmer** teaches an optical subscriber network system (*fig 7*) comprising:

a subscriber bi-directional optical receiver including an Ethernet switch (*fig 7, 140*), a first PHY device (*fig 7, 117*), a second PHY device (*fig 7, 566B*), and a third PHY device (*fig 7, 568B*), wherein, the TX signal output from the second PHY device is used to operate the first PHY device (*fig 7, packets 606 sent from PHY device 566B is used to control PHY device 117*).

Farmer does not disclose expressly teaches the specifics of the PHY devices. **Spurgeon**, from the same field of endeavor, teaches:

an Ethernet switch configured to (1) switch the communication data transmitted from a demultiplexer to a subscriber computer, and (2) receive the communication data transmitted from the subscriber computer (*fig 10-4; section 10.3*);

a first PHY device coupled to the demultiplexer to convert the communication data with a media independent interface type (MII type) into a TX signal (*fig 9-2; section 9.1.3*);

a second PHY device to convert the TX signal into a MII signal for the Ethernet switch, and to convert a MII signal from the Ethernet switch into a TX signal to the subscriber laser diode (*fig 10-2; section 10.1.3*); and

a third PHY device for converting the MII signal into a multi level transmit-3 (MLT-3) signal (*section 9.1.4.1 teaches MLT-3 signaling*).

Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to apply **Spurgeon's** teachings of PHY devices and Ethernet switch onto **Farmer's**

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system as suggested by **Spurgeon**. The motivation for doing so would have been to enable faster communication using a 100BASE-FX media system over popular Ethernet backbone networks (*Spurgeon, chapter 10*).

Response to Arguments

11. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

12. Applicant never defined terminology such as "PHY device" or "FX signal" either in the original specification or in the claim. It is unclear for a person of ordinary skill in the art at the time when the invention was made to understand what PHY and FX stands for. Therefore, USC 112 rejections are maintained regarding the term PHY, and for the new claim limitation FX.

Conclusion

13. The prior art made of record herein and in previous office action(s) and not relied upon is considered pertinent to applicant's disclosure.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danny Wai Lun Leung whose telephone number is (571) 272-5504. The examiner can normally be reached on 9:30am-9:00pm Mon-Thur.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DWL
June 22, 2007


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